CHAPTER X

Theory of Inflation

Inflation is a continuing rise in the general price level. It is usually measured by the consumer price index and the implicit price deflator for gross national product.

TYPES OF INFLATION

There are different types of inflation. The ones most often discussed are: true inflation, creeping inflation, suppressed inflation, hyperinflation and stagflation.

True Inflation

Keynes defines true inflation as a situation in which an increase in aggregate demand fails to increase output. This occurs when the elasticity of output with respect to aggregate demand is zero. Keynes believes that there is a point in the short run at which this can occur.

Creeping (Gradual) Inflation

Creeping inflation is a situation where the general price level is rising slowly but persistently even when aggregate demand is not rising rapidly.

Suppressed Inflation

Suppressed inflation is a situation where a rise in the price level is suppressed by government decrees such as wage and price controls.

Hyperinflation (Galloping Inflation)

Hyperinflation is a situation where prices rise to astronomical heights. It is usually the result of the aftermath of war, as was the

German experience after both world wars.

Stagflation

A rising general price level in the face of high unemployment and excess production capacity is described as stagflation.

THEORY OF INFLATION

Controversy exists between Keynesians and Monetarists as to what causes inflation, how its transmission mechanism works and how it can be controlled.

Monetarist View

All economists agree that inflation is both a short and a long term phenomenon. Monetarists, however, emphasize the latter.

Causes of inflation

Monetarists claim that although short run inflation may have many sources, long term inflation is always a monetary phenomenon. It arises when the money supply expands more rapidly than output. They reject the notion that long run inflation can be caused by non-monetary factors such as expansive fiscal actions, cost push influences, food and fuel shortages, etc. Such factors, they say, can raise prices of certain products. But, unless accompanied by an excessive increase in the money supply, the rise in the prices of those commodities will be offset eventually by declines in prices of other commodities, leaving the average price level unchanged.

Monetarists regard the quantity of money as an exogenous variable, implying that the monetary growth is an independent causal variable governing the rate of inflation. The flow of causation runs one way from money to excess demand (excess of aggregate demand over aggregate supply) to prices and not the other way around.

Stagflation, in the Monetarist's view, occurs particularly when inflationary expectations are very strong, that is, people are convinced that prices will continue to rise. In such a situation, inflationary expectations will continue to put upward pressure on prices even when aggregate demand is falling. (As will be explained in the next section, inflation is affected not only by excess demand but also by inflationary expectations resulting from a continued rise in the money supply.)

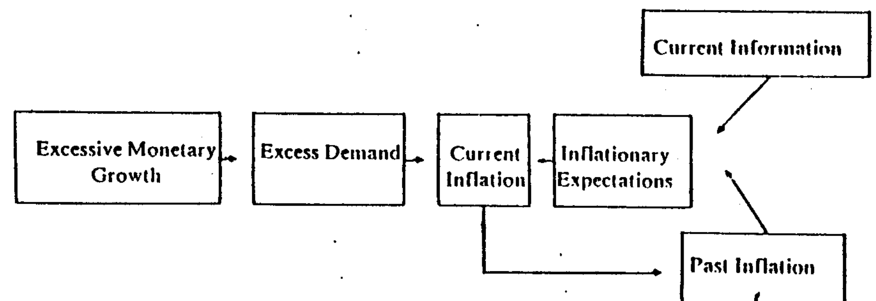
Transmission mechanism

In the Monetarist theoretical framework, the transmission mechanism of inflation works as shown in Diagram 10-1. Excessive monetary growth affects first excess demand and then current inflation. The effect also runs from past inflation and/or current information to inflationary expectations and then to current inflation. Current inflation, after an interval of one period of time, becomes past inflation.

The inflationary process works through two lags: (i) price adjustment lag and (ii) price expectation lag. Price adjustment lag refers to a lag between excess demand and inflation. This lag occurs because businessmen respond to the excess demand by increasing output and depleting inventories first and then by raising prices. When output expands, resources become increasingly scarce relative to demand. The result is that factor prices and, consequently, output prices rise.

DIAGRAM 10-1

INFLATIONARY TRANSMISSION MECHANISM AS VIEWED BY MONETARISTS



The price expectation lag refers to a lag between inflationary expectations and the current rate of inflation. The current rate of inflation is believed to be influenced by inflationary expectations of the previous period. The lag occurs because people cannot predict the future with absolute certainty. Were they able to do so, the expected rate of inflation would always be the one that actually occurs. The length of this lag depends upon how inflationary expectations are formed.

Inflationary expectations are formed on the basis of either one of two hypotheses: the adaptive expectation hypothesis and the rational expectation hypothesis. The adaptive hypothesis states that expectations about the future rate of inflation is formed from past experience. People observe the difference between expected and actual rates of past inflationary periods and then revise their expected rate by some fraction of that difference. The rational hypothesis states that people base their inflationary expectations at least as much on current information about a variety of developments such as the money-supply growth rate and imminent changes in the political administration as on past inflation rates. In other words, under the rational hypothesis people utilize all of the relevant information to form expectations about the future rate of inflation, whereas under the adaptive hypothesis they look at only a small part of the total relevant information, that is, past inflation rates.

The length of the price expectation lag depends upon how far back people go and how much weight they assign to the price experience of the distant past in formulating their expectations. The more weight that they assign to the distant past, the longer will be the lag. Since under the adaptive hypothesis more weight is assigned to past inflation rates than under the rational hypothesis, the price expectation lag under the adaptive hypothesis will be longer.

Monetarists are divided on the issue of whether expectations are formed adaptively or rationally, though the present trend is towards the acceptance of the latter (e.g., Robert E. Lucas, Thomas J. Sargent & Neil Wallace, R.J. Barro and John H. Kareken[1]).

Cure of inflation

Monetarists say that since inflation is caused by excessive monetary growth, it can be controlled by restraining monetary expansion. This prescription has a number of implications:

i. There is no quick remedy for inflation. Because of the price adjustment and price expectation lags, it will take a long time to control inflation.
ii. Inflation can be controlled only at the expense of a temporary recession or, at least, a marked retardation in the expansion of the economy. This is because a restrictive monetary policy reduces output and employment first and then prices.
iii. Direct controls will reduce inflation if they are accompanied by contractionary fiscal and monetary policies. The elimination of inflation requires the eradication of inflationary expectations. The only way to eradicate expectations is to create a recession. (This will cause the actual rate of inflation to fall below the expected rate and, consequently, create a downward revision of the latter.) If controls are not accompanied by contractionary fiscal and monetary policies, excess demand will be suppressed but not curtailed; people will expect prices to rise after controls are lifted.
iv. The economy may experience stagflation. This is because the restrictive policy dampens inflationary expectations only after a considerable lag. When recession occurs as a result of a contractionary policy, prices may continue to rise, at least for awhile, because inflationary expectations are not yet fully curbed.

In addition to slowing down the monetary growth, Milton Friedman, a leading Monetarist, advocates the use of indexation to control inflation. Indexation (indexing, monetary correction or escalator clause) is a plan whereby all deferred payments such as wages, salaries, rents and interest and principal payments are expressed in dollars adjusted for the rate of inflation (a 10 percent rise in the cost of living index will automatically raise wages by a like amount when wages are indexed, for example).

Proponents of indexation claim that it is not a cure for inflation but it would make it easier to terminate inflation once it gets under way. They argue that the Federal Government is the real culprit because it is usually the initial force contributing to an excessive increase in the money supply and, consequently, to inflation. The Federal Government causes an increase in the money supply when it meets the increased demand for expenditures to aid various sectors of the economy. The indexation of tax rates, interest and principal payments on Government securities, and of wages and pensions of Government workers would increase the will of the Federal Government to fight against inflation. As it stands now, the Government benefits in many ways from inflation. A rise in wages resulting from a rise in prices, for example, pushes people into higher income brackets where tax rates are higher. Consequently, people wind up paying more in real taxes than was intended by the Congress. According to Milton Friedman, because of such automatic effects of inflation, the United States Government in 1973 realized something over $25 billion in the form of tax revenues that were never legislated by the Congress.[2] The Government also benefits from the sale of its bonds because the value of money is less at maturity than when issued. Moreover, the rise in the market interest rate caused by inflation does not raise the Government's burden of interest payments.

Supporters of indexation further argue that it will reduce the side effects that effective anti-inflation measures may have on output and employment. Employers will not be stuck with high wages (or excessive wage increases) under existing union contracts. Wages will decline (or their increases will moderate) as inflation recedes. Borrowers will not be stuck with high interest rate costs. Their cost on outstanding loans will decline as inflation tapers off. When economic activity and inflation are falling off, businessmen, who would have deferred capital investment in expectation of lower prices and lower interest rates, will not do so. Therefore, with an effective anti-inflationary policy, output and employment will not decline as much as they would if there were no indexation.

Critics argue that indexation discourages the fight against inflation. If we were all protected from inflation, no one would have an incentive to do anything about it. The Government would be under no pressure to take harsh action. William Fellner says that when an inflationary process begins to develop (which he calls the first phase of the inflationary process), indexation would exacerbate inflation.[3] Under such circumstances, he reasons, the Government would more likely accommodate inflation to head off a recession than curb it in the interest of price stability. Furthermore, it is possible that the general public may interpret the adoption of indexation to mean that the Government has given up the fight against inflation and is seeking to live with it. If such an attitude develops, it would further accelerate inflation by reinforcing inflationary expectations, he concludes.

Keynesian View

Causes of Inflation

Keynesians claim that inflation originates from three sources: (i) Expansionary forces (demand pull inflation), (ii) rise in input prices (cost push inflation) and (iii) concentrated industries (profit inflation).

Expansionary forces generally result from stimulative fiscal and monetary policies. There are instances, however, where they result from the private sector, e.g., expansionary forces caused by high capital spending on plant and equipment, housing booms and heavy consumer expenditures. In some countries export booms have also, at times, contributed to expansionary forces.

The rise in input prices results from labor union pressure to raise wages to a level beyond that warranted by the level of productivity; the tendency of raw material suppliers to form a monopoly or fix prices through collusion; and commodities shortages. The rise in input prices causes a rise in output prices. Empirical studies show that most firms set prices in accordance with some version of the cost-plus principle, i.e., average cost of production plus a margin of profit based on some predetermined target rate of return on investment.[4]

Concentrated (oligopoly or monopoly oriented) industries contribute to inflation through their tendency to respond to a rise in demand by increasing prices rather than output. Oligopolists are reluctant to lower prices even when demand is declining. They are afraid that they may give their rivals a wrong signal, i.e., they are cutting prices to capture a larger share of the market.

In recent years, some Keynesian economists have pointed out a number of other factors as a source of inflation. Nordhaus regards politics as a source of inflation. He argues that the party in power attempts to blow up the economy before election to gain the support of voters and deflates it afterwards, thereby causing a certain amount of inflation over the course of a political campaign.[5] Gordon says that government itself becomes a source of inflation when it surrenders to taxpayers' resistance against tax increases made necessary by an increase in expenditures and bows to the demands of beneficiaries of government programs who resist expenditure reductions.[6] J. Charles Partee regards many institutional arrangements as a source of inflation as they are geared to inflationary solutions to income distribution problems.[7] Minimum wage laws are escalated to keep pace with inflation, social security and some other retirement benefits are indexed to the cost of living, and public employees are given comparability increases without regard to productivity or value of output. Business policies, labor contract bargaining, and government programs are all set in terms of increasing money income to maintain purchasing power, rather than attempting to achieve similar results in real terms by reducing costs and, hence, price pressures.

Keynesians agree with Monetarists that inflation cannot continue for long without monetary nourishment. Neither strong unions nor concentrated industries can put upward pressure on prices unless their actions are accommodated by an increase in the money supply.

Keynesians claim that the money supply is an endogenous variable. It is affected both by the monetary authority and by economic activity. As the economy moves upward, the demand for loans increases. New loans create new demand deposits, thereby increasing the money supply. (In statistical theory, a variable is endogenous if it is jointly determined by other variables in the system. However, many Monetarists have chosen to call a variable endogenous only if its magnitude is not under the control of policy-makers.)

Keynesians explain stagflation as a cost push phenomenon. They say that the general price level can rise during a slump in the economy because of (i) the downward rigidity in wages, (ii) the lag between changes in the cost of production and prices of output, and (iii) the ability of concentrated industries to pass on increases in production costs to consumers. Wages are flexible in the upward direction and rigid in the downward direction. Such wage behavior, Keynesians claim, puts upward pressure on the cost or production even when the demand for goods and services is declining because some unions manage to increase wages.

The lag between changes in the cost of production and prices of output contributes to stagflation because today's price rises reflect yesterday's increases in the cost of production. Due to this phenomenon, prices may continue to coast uphill for awhile even after the recession ensues. The ability of concentrated industries to pass on the increase in the cost of production to consumers even during recession also contributes to stagflation. The cost per unit rises during recession due to sub-optimal utilization of fixed-cost production facilities and institutional difficulties in making any comparable offsetting savings on wages.

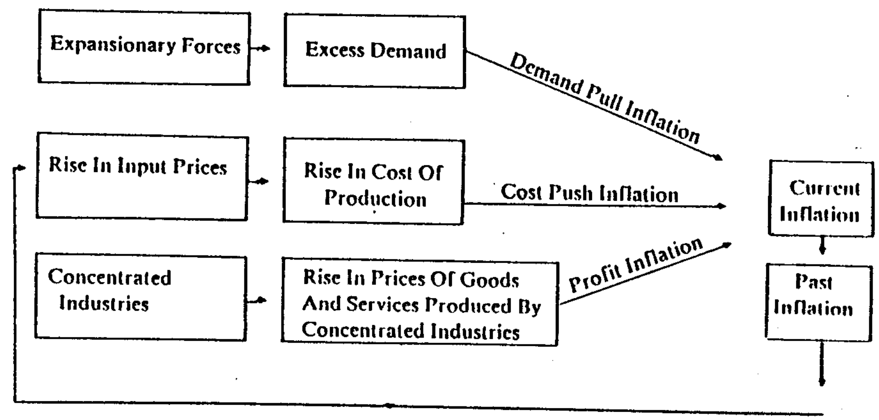
Transmission mechanism

The Keynesian transmission mechanism of inflation is shown in Diagram 10-2. Inflation originates from three sources: (i) expan-

sionary forces, (ii) rise in input prices and (iii) concentrated industries. Expansionary forces cause excess demand and, consequently, inflation. The second source of inflation is the rise in input prices, which affects costs of production and, consequently, inflation. The major factor in the cost of production is wages. When strong unions in one sector succeed in raising wages, employers in other sectors also give some sort of increases because of social forces—the need to maintain morale and efficiency of workers and/or maintain customary equalities and differentials with respect to wages. The third source of inflation is the desire of concentrated industries to maintain high profit or to increase their profit margin. Concentrated industries can raise prices more easily than others.

DIAGRAM 10-2

INFLATIONARY TRANSMISSION MECHANISM AS VIEWED BY KEYNESIANS



Current inflation, after a lag of one period of time, becomes past inflation. Past inflation affects current inflation via input prices. It influences wages—input prices—in two ways: One, automatically, through the operation of cost of living adjustment clauses in wage contracts. Two, through the collective bargaining process as organized workers seek to increase their real wages. James Tobin claims that the rate of inflation in the immediately preceeding period is a good predictor of the inflation rate in the following period because the trend of prices solidly builds into the economy, with a powerful and persistent momentum.

Cure of inflation

Keynesians claim that inflation can be controlled by restrictive fiscal and monetary policies, supplemented with either atomization of big business and big labor or by some sort of incomes policy (i.e., wage and price controls). An improvement in productivity can also help to curb inflation. The atomization of big unions and big business will help in the fight against inflation because they make product and labor markets more competitive, curtailing the upward pressure on costs and prices.

Keynesians further assert that restrictive fiscal and monetary policies alone may be adequate where inflation is demand related (demand pull inflation). Where inflation is cost or profit related (cost push or profit inflation), restrictive fiscal and monetary policies should be accompanied by incomes policy and/or with some measures to increase productivity. Otherwise, drastic contractionary fiscal and monetary policies will be needed to accomplish the objective, which cannot be pursued for long as they will cause too much unemployment.

Keynesians are divided as to the nature of the incomes policy that should be pursued to curb inflation. James Tobin advocates strict public control of prices and wages.[8] Arthur Okun and others advocate voluntary controls only.[9]

Recently some economists, including Arthur Okun and Henry Wallich have advocated another type of incomes policy called, Tax based Incomes Policy (TIP), to control inflation.[10] It would work something like this: Each year the government would announce a wage increase guideline as well as a TIP tax schedule for the next year. At the end of the year, firms whose wage increases went over the government's guideline would pay additional tax and those whose wage increases went below it would receive a cut in tax. Suppose the government announces a wage increase guideline of 6 percent and a tax rate of 2 percnt. This means that for each percentage point of wage increase a firm grants over (or under) 6 percent, 2 percentage points will be added to (or subtracted from) its corporate profits tax rate. If a

firm grants an 8 percent wage increase (2 percentage points above the guideline), 4 percentage points will be added to its profits tax rate. If it grants a 6 percent wage increase, its profits tax rate will remain unchanged. If it grants a 4 percent wage increase (2 percentage points below the guideline), its profits tax rate will decline by 4 percentage points. Since TIP makes larger wage increases more expensive to employers, it will stiffen the employers' resistance to labor wage demands. As a result, increases in wages will slow down. Since wages are an important component in the cost of production, a slowdown in wage increases means a decline in price inflation.

Critics argue that TIP, like any other incomes policy, will be used only for a short while to hold down price increases. When it is removed, prices will shoot up even higher than they would have otherwise. This has been the experience, they claim, with wage price controls. They add that it will divert many government resources from productive use to the maintenance of a costly bureaucracy to administer a policy of this kind. Preston Miller even questions whether such a policy can temporarily hold down price increases.[11]

SUMMARY

Inflation is defined as a continuing rise in the general price level. The theory of inflation is widely debated between Monetarists and Keynesians. Monetarists claim that the excessive money supply is the real culprit of inflation. Since inflation is caused by excessive money supply it can be controlled by restraining its expansion. They further argue that although indexation is not a cure for inflation, it can make it easier to control. Regarding transmission mechanism, they believe that excessive monetary growth creates excess demand followed by a higher price level. The effect also runs from past inflation and/or current information to inflationary expectations and then to the current price level.

Keynesians, on the other hand, claim that inflation originates from three sources: (i) Expansionary forces (demand pull inflation), (ii) a rise in input prices (cost push inflation), and (iii) concentrated industries (profit inflation). Regarding transmission mechanism, they believe that expansionary forces cause excess demand and, consequently, inflation. Expansionary forces result primarily from expansionary fiscal and monetary policies. In the case of cost push inflation, a rise in input prices causes a rise in the cost of production and, consequently, inflation. Profit inflation stems mainly from attempts of concentrated industries to maintain high profit margins even when demand is slackening or just to push up profit margins. Past inflation also affects current inflation but indirectly via input prices. Keynesians believe that inflation can be controlled by restrictive fiscal and monetary policies, supplemented with either atomization of big business and big labor or by some sort of incomes policy. Measures used to increase productivity can also help to fight against inflation.

FOOTNOTES

[1]Robert E. Lucas, "Econometric Testing of the Natural Rate Hypothesis," in **The Econometrics of Price Determination**, ed. Otto Eckstein (Washington, D.C.: The Board of Governors of the Federal Reserve System, 1972), p. 54; Thomas J. Sargent & Neil Wallace, "Rational Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule," **Journal of Political Economy** (April 1975), p. 254; Robert J. Barro, "Rational Expectations and the Role of Monetary Policy," **Journal of Monetary Economics** (January 1976), pp. 1-32; and John H. Kareken, "Inflation: An Extreme View," **Quarterly Review: Federal Reserve Bank of Minneapolis** (Winter 1978), p. 11.

[2]Eileen Shanahan, Moderator, **Indexing and Inflation** (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1974), p. 2.

[3]**Ibid.**, p. 6.

[4]Yvonne Levy, "The Outlook for Inflation Based on Cost-Push & Capacity Factors," **Economic Review: Federal Reserve Bank of San Francisco** (Spring 1977), p. 22.

[5]William D. Nordhaus, "The Political Business Cycle," **Review of Economic Studies** (April 1975), p. 187.

[6]Robert J. Gordon, "The Demand and Supply of Inflation," **Journal of Law and Economics** (December 1975), p. 808.

[7]J. Charles Partee, "Some Economic Policy Issues," **Voice: Federal Reserve Bank of Dallas** (May 1978), p. 3.

[8]James Tobin, "Inflation and Unemployment," **American Economic Review** (March 1972), p. 14.

[9]Arthur M. Okun, Henry H. Fowler and Milton Gilbert, **Inflation: The Problems, Its Causes and the Policies It Requires** (New York: New York University Press, 1970), p. 27.

[10]Henry C. Wallich, "Stabilization Goals: Balancing Inflation and Unemployment," **American Economic Review** (May 1978), pp. 28-30; and Arthur M. Okun, "The Great Stagflation Swamp," **The Brookings Bulletin** (Fall 1977), pp. 1-7.

[11]Preston Miller, "TIP: The Wrong Way to Fight Inflation," **Quarterly Review: Federal Reserve Bank of Minneapolis** (Spring 1978), p. 12.

QUESTIONS FOR REVIEW

1. Describe in brief the following:
   i. True Inflation
   ii. Creeping Inflation
   iii. Suppressed Inflation
   iv. Hyperinflation
2. What is stagflation? What causes it?
3. Evaluate critically the use of indexation as a tool for controlling inflation.
4. Describe the transmission mechanism of inflation as viewed by Keynesians.
5. Define inflation. How is inflation caused in the Keynesians theoretical framework?
6. Describe the differences between Keynesians and Monetarists as to the cause of inflation.
7. Explain rational and adaptive hypotheses as they pertain to inflationary expectations.
8. Explain price adjustment and expectation lags. What role do they play in the Monetarist transmission process?
9. Discuss the important policy implications that may arise by following the Monetarist prescription for curing inflation.
10. What do we mean by endogenous and exogenous variables? Would you treat the money supply as an endogenous or exogenous variable? Why?

SUGGESTED FURTHER READING

1. Berman, Peter I. "The Basic Cause of Inflation." **Across the Board**. May 1978, pp. 67-70.
2. Cloos, George W. "Indexation and Inflation." **Economic Perspective: Federal Reserve Bank of Chicago**. May/June 1978, pp. 3-9.
3. Dobson, Steven W. "Inflation-The Role of Market Structure." **Review: Federal Reserve Bank of Dallas**. June 1977, pp. 1-9.
4. Eastburn, David P. "Voluntary Inflationary Restraint and Corporate Social Responsibility." **Business Review: Federal Reserve Bank of Philadelphia**. January/February 1979, pp. 3-4.
5. Eckstein, Otto (Ed.). **The Econometric of Price Determination**. Washington, D.C.: Board of Governors of the Federal Reserve System and Social Science Research Council, June 1972.
6. Friedman, Milton. **Monetary Correction: A Proposal for Escalator Clauses to Reduce the Costs of Ending Inflation**. Westminister, England: The Institute of Economic Affairs, 1974.
7. Friedman, Milton and Samuelson, Paul A. "The President's New Economic Program: Domestic Wage-Price Controls." Testimony before